

## WHAT IS CLAIMED IS:

1. A semiconductor device comprising:  
a semiconductor chip having polarities; and  
a plurality of first protection diodes connected in series  
5 with polarities thereof being arranged in a same direction, the  
first protection diodes and the semiconductor chip being  
connected in parallel with the polarities of the first  
protection diodes being arranged in a same direction as an  
arrangement of the polarities of the semiconductor chip.

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2. A semiconductor device according to Claim 1, further  
comprising a submount, to which the semiconductor chip is joined,  
to dissipate heat generated in the semiconductor chip; wherein:  
the first protection diodes are formed in the submount.

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3. A semiconductor device according to Claim 2, wherein  
the submount includes:

a semiconductor substrate having a first conduction type  
and made of one of silicon, silicon carbide, and diamond; and  
20 an epitaxial layer having the first conduction type and  
formed on one surface of the semiconductor substrate, and  
wherein each of the plurality of first protection diodes  
includes:

a first diffusing layer having a second conduction type,  
25 which is different from the first conduction type, and formed

in a vicinity of a surface of the epitaxial layer; and  
a second diffusing layer having the first conduction type  
and formed in a vicinity of a surface of the first diffusing  
layer in a region spaced apart from a region having the first  
5 conduction type of the epitaxial layer.

4. A semiconductor device according to Claim 3, wherein:  
the first diffusing layer is provided in a plural number  
in the epitaxial layer while being spaced apart from one another;  
10 and

the second diffusing layer is formed in the vicinity of  
the surface of each of the first diffusing layers.

5. A semiconductor device according to Claim 3, wherein:  
15 the submount further includes a third diffusing layer  
having the second conduction type and forming a second  
protection diode together with the epitaxial layer, the third  
diffusing layer being formed in the vicinity of the surface of  
the epitaxial layer in a joined region to the semiconductor chip.

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6. A semiconductor device according to Claim 1, wherein  
the submount includes:

a semiconductor substrate having a first conduction type  
and made of one of silicon, silicon carbide, and diamond;  
25 an epitaxial layer having the first conduction type and

formed on one surface of the semiconductor substrate; and  
a third diffusing layer having a second conduction type,  
which is different from the first conduction type, and forming  
a second protection diode together with the epitaxial layer,  
5 the third diffusing layer being formed in a vicinity of a surface  
of the epitaxial layer in a joined region to the semiconductor  
chip.

7. A semiconductor device according to Claim 3, wherein:  
10 the semiconductor chip includes an electrode on the second  
conduction type side; and

the submount further includes a fourth diffusing layer  
having the first conduction type and used for an electrical  
connection to the electrode, the fourth diffusing layer being  
15 formed in the vicinity of the surface of the epitaxial layer  
and having a higher concentration of an impurity than the  
epitaxial layer.

8. A semiconductor device according to Claim 1, wherein  
20 the semiconductor chip is a laser diode.